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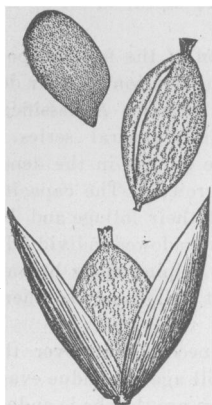
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**Expulsion of the seeds of *Sporobolus cryptandrus*.\***—The caryopsis of most Gramineæ contains a seed which firmly adheres to the pericarp. *Sporobolus* and some others have long been known as exceptions to this rule. The ovary of *Sporobolus* is very thin and tender. Free seeds may often be seen still adhering to various portions of the glumes and branches of the panicle. One of my special students, at my suggestion, has made a few experiments to determine the mode in which the seed escapes. Inside the ovary and about the seed there is a gummy secretion. When about ready to escape or at a certain stage of maturity, if water be applied to the panicle, in a short time the seeds come forth. A part of a panicle was wet and in 30 minutes 27 seeds escaped; in 37 minutes 40 seeds had escaped. In another case the seeds began to escape in ten minutes after the water was applied. After drying six days in a room seeds started out twenty minutes after wetting. In other cases seeds were seen to escape in six minutes, and in one case in four and one-half minutes. If the ovary is carefully removed from the floral glume and palea, and water is applied, the seed usually escapes a little quicker than when left in the floret.



On applying water the ovary may be seen to slowly enlarge till it bursts and the seed pops out in a hurry. If a little water is applied, it moves more slowly, and if the glumes are still near the ovary the seed moves upward and usually adheres to some part of the panicle. A slight sprinkling or a heavy dew would bring the seeds out, but a heavy rain would wash them down at a time when the condition would be favorable for germination. Several other species, as I judge from herbarium specimens, expell and hold their seeds in a similar manner. The action of the water on the ovary seems to be purely mechanical and is explained in well known works on physics. The water enters the ovary faster than the gum can escape. The ovary is flattened and splits on the side next the palea.—W. J. BEAL.

**The Biology of timber trees with special reference to the requirements of forestry** †—It is most necessary for forestry purposes to thoroughly understand the biology of the timber tress to be propagated, as injudicious methods of propagation, selection of unsuitable species and improper after treatment may occasion heavy financial loss, the results being visible only after many years of investment. The selection of the material for forestry purposes out of the 420 arborescent species is made difficult by the absence of knowledge as to the true value not only of the timber, but the growing capacities of our trees.

A classification may be made into dominant species, which are capable of

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\*Read before the Botanical Club of the A. A. A. S., Buffalo meeting, 1886.

† Portion of an abstract, by the author, of a paper read before the A. A. A. S., Buffalo meeting, 1886.

forming extensive forests, co-ordinates, which may be occasionally grown in extensive plantations for their economic value, though properly not desirable for dominant forest growth, and subordinates which are useful to fill up the forest stand.

The most important qualities for the consideration of the forester, possessed by different timbers in a different degree, are the relation of their development to the influence of light, shade, and rate of growth. A classification into shade-enduring and light-needing species in a general series is possible. The relative requirements as to light must be studied in the dense forest, where no side light changes the habit of forest growth. The capacity of trees to endure shade is manifested by the density of their foliage and by the tenacity in sustaining life of lower branches and overshadowed individuals. Conditions of site modify the requirements for light. Alpine floras become light-needing floras; cloudy climes increase requirement of light and southern skies diminish it, so do humid atmospheres.

As the preservation of soil humidity becomes a necessity all over the world only such species as are capable of shading the soil against undue evaporation should be chosen for the dominant forest. These are the shade-enduring ones.

A study of the form-development must precede consideration of rates of growth. Trees may be classified according to their greater tendency to develop the bole or the crown. Their true habitus must be studied in the open; the dense forest influences the development especially of the latter class, it stimulates height-growth. Soil, situation and age influence form-development, the energy of height-growth being increased in fresh and deep soils, while shallow and compact soils, altitude, cold winds reduce this energy.—B. E. FERNOW.

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## EDITORIAL.

IT IS PROBABLY safe to say that the botanists form the best compacted organization of scientific workers in the country. Their work demands the most widespread exchange of facts, and this has led to correspondence which has often ripened into friendship. This can be plainly seen at such meetings as the one just held at Buffalo, and the Botanical Club is doing a great thing in fostering these friendships and binding together still more firmly widely scattered workers. A spirit of courtesy is prevalent, the spirit which prompts to render every possible service, and respects the rights of one who is already occupying some special field. The whole field of botany is so large that there is an abundance of room for every one without jostling. The stimulus of these annual meetings in directing botanical activity can hardly be overestimated. Never before has there been such botanical activity in this country, and no small part of the cause is due to the botanical journals which supply the means of speedy publication, and the meetings of the Botanical Club, which bring all workers into more sympathetic relationship. We would urge upon botanists who have not already mapped out their work that they select at once some convenient subject for investigation during the coming year, so that at their